Demonstration of a Self-tuned HVAC System

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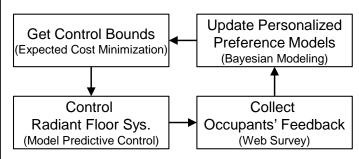
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Project Description

- Providing personalized/localized thermal environments toward maximizing occupants' satisfaction and HVAC energy efficiency
- Learning occupants' preference from their feedback and behaviors
- Integrating personalized preference models into a MPC controller

Approach

Conduct an experiment with real occupants in LivingLab 1 to demonstrate a self-tuned HVAC system



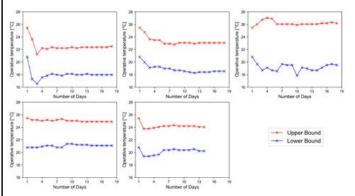


Discussion

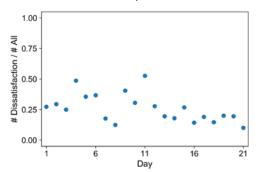
- The system is self-tuned with occupants' feedback and the proposed algorithm
- Supplementary simulation studies will be conducted to
 - 1) Evaluate the controller objectively
 - 2) Investigate the effect of different settings in the algorithm

Results

Evolution of control bounds



Improvement of thermal conditions (decrease in the normalized number of dissatisfaction votes)



Toward a new paradigm: Personalized Thermal Environments

